Bering Sea Habitat Conservation Gear Modification Implementation

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Background

This document discusses the development of a potential implementation program for gear modification under the Bering Sea habitat conservation action being considered by the North Pacific Fishery Management Council (Council). In June 2008, the Council directed staff to develop a discussion paper on gear modification requirements for the flatfish trawl fishery to reduce potential impact on bottom habitat. The requirements are based on the results of research conducted in cooperation with the flatfish industry by the Alaska Fisheries Science Center (AFSC).

The basic objective of the gear modifications is to reduce seafloor contact of the sweeps of nonpelagic trawl gear used to target flatfish in the Bering Sea. Discs or other elevating devices (e.g., bobbins) are attached to the sweeps to reduce seafloor contact or to increase clearance between the gear and the substrate (Fig. 2). In 2008, research by Dr. Craig Rose of the AFSC showed that using an 8-inch elevating device at 60-foot intervals and a 10-inch elevating device at 90-foot intervals provided clearances that were not substantially different than those used in the experiments on reductions in seafloor contact by 8-inch elevating devices at 30-foot intervals) (Fig. 3). Although we expect that the industry would use devices that would easily meet the standards specified in the regulations, the regulations also should allow for some flexibility to provide for minor wearing of the devices or potential slippage of the devices on the sweeps during operations as long as the overall modified sweep accomplishes the desired clearance.

To meet the goals of effectively elevating the sweep from the bottom and providing flexibility for minor wear and tear during operations, a performance standard would require the sweep to be elevated at least 2.5 inches from a flat surface adjacent to the elevating device while the sweeps are stretched out on deck or otherwise inspected shoreside. Spacing of the elevating devices installed on the sweeps would be at intervals of no more than 65 feet for devices providing between 2.5 and 3.5 inches clearance or no more than 95 feet for devices providing at least 3.5-inch clearance, as explained below. When used on 2-inch diameter sweeps, the 2.5-inch clearance would be practically achieved with devices that are 8 inches in diameter, while a 3.5-inch clearance would require 10 inches in diameter devices. Because research showed that these combinations of device diameter and spacing provided 3 inches of clearance, the standard of 2.5 inches allows for 0.5 inches in excess clearance for wear and variability in materials and construction.

While not part of the trawl net, sweeps are part of the trawl system used to herd fish into the trawl. In a typical flatfish trawl, sweeps extend from the aft end of the door bridles back to the forward end of the wing extensions (Figure 1). The rigging between the net

and the doors includes bridles and sweeps. Length of the sweep section of the trawl varies by vessel but may be as long as 1200 feet on flatfish vessels. Long trawl sweeps are common in flatfish trawls using a fabric covered cable called "combination rope." Sweeps can also be made of steel cable covered by small rubber disks or continuous rope wrapping ("mudgear"). The diameter of sweeps used for flatfish fishing ranges from 2 to 3 inches, depending on the material used and gear preference of fishers.

On vessels using long extensions of sweeps (e.g.,1200 feet), as many as 20 elevating devices would need to be installed on the sweeps, if a vessel uses 8-inch diameter elevating discs or bobbins spaced at approximately 60-foot intervals on each side of the trawl. This could require as many as 40 elevating devices and, hence, a relatively large number of spaces that may need to be checked to determine if the modified sweep standards are being met. For vessels using elevating discs that are a minimum of 10 inches in diameter, approximately 14 discs would be needed to be spaced at 90-foot intervals to meet the modified sweep requirement and a total of approximately 28 verification points.

Practically, the sweeps are much too long to be completely stretched across a vessel deck. A detailed, onboard inspection would require examining the sweep by sections while stacking the remainder, putting it onto another net reel (if available), or while the net is being set or hauled. On most trawl vessels, when the trawl is onboard the vessel, the trawl net is wound onto the net reel on top of the sweeps. It may be more practical to determine if the sweep meets the standards during construction. Sweeps may be constructed by the fishers using sections provided by the manufacturer. Spare sections and parts are usually carried on the vessel.

A few flatfish catcher processor vessels in Alaska do not have net reels and wind the sweeps onto the main deck winches over the top of the trawl main wire (Jeff June, personal communication, January 9, 2007). The Fishing Company of Alaska's boats and the F/V Seafisher currently are the only flatfish trawl vessels without net reels according to flatfish industry sources, and those boats are among the largest in the trawl non-AFA catcher-processor fleet (H&G fleet). The other vessels in this fleet, including the smallest ones, have net reels. For vessels that do not use net reels, the net has to be deployed or stacked onto the deck to access the sweeps. Based on information provided by flatfish fishers regarding vessels without net reels, we expect that these vessels will elect to use the 8-inch elevating discs spaced at 60-foot intervals to meet the modified disc standards, if approved by the Council and NMFS. Eight-inch discs are reportedly preferred because 10-inch elevating discs/bobbins apparently present considerable problems for passing through the level wind devices commonly used on these vessels to wind and unwind the main wires (trawl warps) onto main wire drums.

To establish a requirement for modified trawl sweeps for the directed flatfish fishery in the Bering Sea, disc height and spacing standards and prohibitions against flatfish fishing without modified gear must be stated in the regulations. NMFS would need to establish a method of ensuring that vessel owners and operators comply with the gear requirements. The program should ensure that the gear is properly constructed, used, and maintained.

Manufacturers, the fishing industry, and personnel from the AFSC, NOAA Office of Law Enforcement (OLE), North Pacific Groundfish Observer Program (NPGOP), NMFS Sustainable Fisheries Division (SF) and US Coast Guard (USCG) would need to develop and implement the program. This requirement may apply to approximately 207 vessels based on the number of license limitation program permits with BS trawl endorsements issued in 2007. Not all of those 207 vessels currently fish for flatfish, however, and NMFS expects approximately 30 vessels regularly engage in target flatfish fishing, and therefore would be affected by this proposed regulation. The estimated number of vessels targeting flatfish in the Bering Sea includes approximately 24 dedicated flatfish vessels (H&G sector) and as many as six pollock catcher processors that target flatfish seasonally (generally in the spring) when they are not fishing for pollock. Some fishing effort for yellowfin sole by AFA and non-AFA catcher vessels delivering to floating processors also occurs sporadically.

A gear modification meeting was held in March 2007, to address manufacturing and implementation issues based on the gear modification research completed at that time. The notes from that meeting are included in Appendix 1 at the end of this paper. With the results of the most recent research indicating that elevating device spacing can be wider and with the resolution of implementation issues previously identified, a second meeting is scheduled September 8, 2008. This meeting will be a Council-sponsored workshop, including manufacturers, fishing industry representatives, NOAA OLE, USCG, NPGOP, and NMFS SF, and AFSC participants. This workshop is intended to educate participants in the latest research and manufacturing methods for modified gear and to ensure development of regulations that provide effective implementation and enforcement of a modified gear requirement.

Potential Regulation Changes:

Several regulations in 50 CFR part 679 would need to be revised to implement a modified trawl sweep requirement. The requirements would apply to all federally permitted vessels in reporting areas of the Bering Sea subarea and adjacent State of Alaska waters.

1. New definitions under § 679.2 should be added for nonpelagic trawl sweeps and for directed fishing for flatfish for purposes of the gear modification requirement. The flatfish fishing definition includes any exemption from a nonpelagic trawl closures based on the use of modified gear. The definition for federally permitted vessels should be revised to include modified trawl gear for flatfish fishing in the Bering Sea.

§ 679.2 Definitions

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Directed Fishing for Flatfish means for purposes of nonpelagic trawl restrictions under § 679.22 (a) and gear modification requirements under §§ 679.7(c)(3) and 679.24(f), fishing with nonpelagic trawl gear during any weekly reporting period that results in a retained aggregate amount of yellowfin sole, rock sole, Greenland turbot, arrowtooth flounder, flathead sole, Alaska plaice, and other flatfish that is greater than the retained amount of any other fishery category defined under § 679.21(e)(3)(iv).

Note: This closure area would need to be included if the wedge in Fig. 4 applies only to flatfish fishing with modified gear.

* * *

Federally permitted vessel means a vessel that is named on either a Federal fisheries permit issued pursuant to § 679.4(b) or on a Federal crab vessel permit issued pursuant to § 680.4(k) of this chapter. Federally permitted vessels must conform to regulatory requirements for purposes of fishing restrictions in habitat conservation areas, habitat conservation zones, and habitat protection areas; for purposes of anchoring prohibitions in habitat protection areas**; for purposes of modified gear requirements for the BS directed flatfish fishery,** and for purposes of VMS requirements.

Sweeps means the lines connecting the doors to the footrope (or fishing line) of the trawl, except for the 90 feet closest to the doors and the 150 feet closest to the forward ends of the fishing line (or footrope).

Note: highlighted part needs to be determined at workshop.

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2. A new paragraph (s) in § 679.5 may be needed to require the fishers to provide documentation that the trawl sweeps meet the performance standards. Possible types of documentation include a manufacturer's warranty and proof of inspection. This would require Paperwork Reduction Act approval.

3. A new subparagraph (3) also would be added to § 679.7(c) to prohibit directed fishing for BS flatfish without sweeps that meet the standards specified at § 679.24(f).

§ 679.7 Prohibitions

* * * * *

§ 679.7(c)(3) Conduct directed fishing for flatfish as defined in § 679.2 with a vessel required to be federally permitted in any reporting area of the Bering Sea subarea as described in Figure 1 to this part and adjacent State of Alaska waters without meeting the requirements for the nonpelagic trawl sweeps specified in § 679.24(f).

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4. § 679.22(a)(21) is added to read as follows:

* * * * *

(a) * * *

(21) Flatfish Trawl Zone. No federally permitted vessel may fish with nonpelagic trawl gear in the Flatfish Trawl Zone specified at Table 46 and Figure 22 to this part, except for vessels directly fishing for flatfish using modified gear as specified in § 679.24(f).

A coordinate table and possibly a figure would be added to the regs for this zone.

If the wedge is to be open to all nonpelagic trawling, only the coordinate table and the Northern Bering Sea Research Area figure will need to be modified to eliminate the wedge from the NBSRA and no reg. changes in 679.22 would be needed.

In either case, the NBSRA figures and coordinate table would need to be changed.

5. To establish standards and requirements for the use of modified nonpelagic trawl sweeps, add paragraph (f) to § 679.24 Gear Limitations.

§ 679.24 Gear Limitations

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§ 679.24(f) Nonpelagic trawl sweeps for directed flatfish fishing with federally permitted vessels in reporting areas and adjacent State waters of the BS, as described in Figure 1 to this part. Vessel owner or operators using nonpelagic trawl gear for directed flatfish fishing must meet the following standards in subparagraphs (1) through (3):

(1) elevating discs, bobbins or similar devices installed on the sweeps that raise the sweeps at least 2.5 inches, as measured adjacent to the device when resting unsupported on a hard, flat surface, regardless of device orientation, and measured between the supporting surface and the lowest part of the sweep material;

(2) elevating devices secured along the entire length of the sweeps at either

(i) no more than 65 feet between elevating devices that raise sweeps between 2.5 and 3.5 inches (6.35 to 8.89 cm), or

(ii) no more than 95 feet between elevating devices that raise sweeps more than 3.5 inches (8.89 cm);

and

(3) The largest cross-section of the sweeps between elevating devices shall not be greater than at the nearest measurement location. Wider cross-sections resulting from doubling the line back for section terminations and devices required to connect sections are exempt from this requirement. Where a device is installed over material different from the sweeps, (for example, on a chain joining two sweeps sections), that material must be at least as wide as the sweep material.

Adding a Regional Administrator option to change the spacing was previously considered, but this may not be acceptable due to Administrative Procedure Act concerns. Future research may examine increasing the spacing distance as long as the increased spacing distance results in sufficient clearance in order to achieve the benefits attained in Dr. Rose's sweep modification studies. If the increased spacing is effective at providing sufficient clearance, the benthic protection should be increased due to further reduction in seafloor contact. Increasing the spacing also would increase feasibility for fishers and potentially reduce costs. Increased spacing may require more diligence to ensure the elevating devices are in good repair and properly spaced because of less overall support to raise the sweep. The Council may wish to provide for the implementation of a standard now and revisit the standard in the future if new research shows more effective methods of modifying the gear.

Implementation Program:

Responses to questions regarding gear standard programs were received from three of the five other NMFS regions. Each region responding has some form of gear standard that must be met. Program implementation essentially is through performance standards in the regulations and ensuring compliance through inspections. No pre-approval or certification programs were used. Fishers improved compliance with the standards in a year or two after implementation, especially after one or more citations were issued for failure to comply. It appears that this model (like the seabird avoidance gear model in Alaska) is likely the most effective and less resource intensive for the agency than a pre-approval or certification program conducted by the agency.

The implementation of a modified trawl sweep program will involve manufacturers, fishers and NMFS, NPGOP, USCG, and OLE personnel. The fishers will be responsible to ensure their sweeps meet the standards, and this may be randomly checked by several methods. Agency enforcement activities will focus on complying with the prohibition regarding flatfish fishing with a modified trawl sweep. An at-sea observer may observe the deployment or retrieval of the net to determine the presence or absence of the modified sweep. The OLE would be notified if the sweep may not meet the standard or if no modified gear is detected. OLE may follow-up with a more intensive dockside inspection. The USCG may conduct at-sea inspections to determine if a modified sweep is present or absent. The details of the types of inspections and the procedures to be used by each organization will need to be developed and personnel trained before implementation of the gear modification requirement.

Determining compliance with the standards will be difficult once the sweeps are installed on the vessels. The USCG has suggested that a manufacturer's warranty and industry inspection of used sweeps may be an option for fishers to prove the sweep was constructed to meet the standards and that used sweeps are continuing to meet the standards. This would be a program similar to one used for safety gear on vessels, such as life rafts. An industry representative with Dantrawl, Inc, one of the three major manufacturers of bottom trawl gear in Alaska, indicated that providing a manufacturer's warranty would be no problem. It is not clear if this would be equally effective for

sweeps assembled by the manufacturer and for sweeps assembled by crew. OLE is concerned that this may not be feasible because of the resources needed to approve the industry to perform gear approvals and inspections. Further research with USCG is needed to determine how they might administer this program, including their regulations for this provision.

It is likely that many fishers will purchase the sweep components and do the assembly, including installation of elevating devices. The gear also is likely to receive wear during use, requiring at-sea repairs to elevating devices and replacement of sweep sections. It is possible that used sweeps may not meet the performance standards. Approval at the beginning of the fishing season may not be sufficient to determine compliance with the standards throughout the year, and an additional check may be needed to assure continued compliance.

The following are steps and considerations that need to be addressed to design the implementation program.

1. Work with manufacturers to construct sweeps that meet the standards.
    a. Contact all known manufacturers of flatfish trawl sweeps. (J. Gauvin completed in 2007 and emailed manufacturers again in August 08 regarding 9/8/08 workshop)
    b. Workshop with industry, NMFS NPGOP, AFSC, OLE, USCG, and SF to review standards and determine if any difficulties or issues need to be resolved. Discuss methods to ensure sweep components are manufactured in a way to visually determine compliance, and to determine if elevating devices are properly spaced on the sweeps and if the elevating device can give the required 2.5-inch clearance of the sweep from the bottom. (Workshop at Dantrawl on 9/8/08)
    c. How can the industry be more involved in ensuring performance standards are met?
        i. Is it possible to warranty sweeps that are provided in components with instructions for assembly that would meet the performance standards?
        ii. Can an industry-based inspection program be used to ensure performance standards are met for used sweeps?

2. Provide training to fishers to ensure they are obtaining and maintaining sweeps to meet the standard. Could AFSC do this (workshop?), the manufacturers, or could a contract be used?

3. Work with NPGOP, OLE, NMFS SF, and USCG on implementation of program
    a. Where can each organization participate in checking compliance?
        i. Observers could focus on whether the modified sweep is being used or not for flatfish fishing. Observers may watch sweep during retrieval or deployment to see if elevating devices are present and appear to be in the right location. Use spot checks. May be

accomplished by either markings on the sweeps or markings on the deck of the vessel.

ii. OLE staff could check the presence of modified sweeps on board during dock side inspection and compare presence of modified gear with catch and fishing location. If notified of potential problems, inspection may be more intensive to determine if standards are met.

iii. NMFS SF staff could work with manufacturers to build sweeps to standards. NMFS SF staff may also check for presence of modified sweep during scale inspections on vessels.

iv. USCG could perform onboard inspections to check for presence of modified sweeps. This is not likely to occur during voluntary safety inspections because the trawl net is usually on the net reel, covering the sweeps.

v. All agencies' personnel may review vessel records to determine if manufacturer's warranty and inspection requirements are met for the modified sweeps.

b. Need to address enforcement concerns and develop inspection protocol:

i. What happens if the vessel is fishing, and it is discovered that the sweep doesn't meet the standard for a variety of reasons? Is one missing elevating device as bad as several? If elevating device spacing is not consistently meeting the standard, is that a problem? When would a vessel be required to stop fishing?

ii. OLE, NPGOP, USCG, and NMFS SF will need to work with the fishing industry to develop workable standards to effectively and reasonably enforce the gear modification requirements, taking into account wear and tear of the sweeps. Field criteria could be developed to establish when a violation occurs.

The gear modification workshop will be held at Dantrawl in Seattle, Washington on September 8. 2008. The draft agenda for the workshop is:

1. Introductions: 10 minutes
2. Latest research results: Craig Rose 30 minutes
3. Gear designs (bobbins, placement, rope types, net reels and without net reels, practical applications: John Gauvin 30 minutes
4. Council June motion: Diana Evans: 15 minutes
5. Draft Regulations: Melanie Brown: 15 miniutes
6. Monitoring and Enforcement issues (Identify problems and suggest solutions): Melanie Brown moderator 1 hour

The following are issues to be discussed during the workshop:

Regulation Issues:

Should the definition of the sweeps include all lines between the doors and the fishing line or the footrope?

The definition of fishing line is a length of chain or wire rope in the bottom front end of a trawl to which the webbing or lead ropes are attached. The definition of the footrope is a chain or wire rope attached to the bottom front end of a trawl and attached to the fishing line. For purposes of establishing where to measure and attach elevating devices, we should describe whether the sweep extends to the footrope or beyond that to the fishing line.

What distances should be not included in the spacing measurements for the elevating devices next to the doors and next to the trawl?

The bridles can include a substantial portion of the length of the trawl gear. Adding the length of the bridles at the door and trawl end of the sweep would increase the number of elevating devices needed. The suggested regulatory definition of the sweep excludes 90 feet closest to the doors and the 150 feet closest to the forward ends of the fishing line. Are these exclusion distances appropriate? Should fishing line be footrope?

Should the regulations be written as a gear standard, performance standard, or a combination?

The draft regulations use at least 2.5-inch clearance requirement and spacing depending on the clearance. Research showed 10-inch diameter devices on combination wire and 8-inch devices on wire to be effective. Should the regulations be specific to the size of the disk and the type of sweep or should the standard of 2.5 inches continue to be used but work with the manufacturer and industry to use the right size discs for the type of sweep?

Should the regulations specify a range of values for the spacing of the devices and for the diameter of the devices? If so, what should that range be?

New elevating devices are likely to be made in a standard size of either 8 inches or 10 inches in diameter. Is there a certain amount of wear that is acceptable so that a range of diameter size could be used in the regulations? The spacing of the devices is dependent on the diameter of the devices. Understanding that some slippage may occur in one or more points of connection, can we specify an acceptable range of distances between devices? See current draft regulation language.

<u>Implementation:</u>

What method is preferred to easily see if the spacing of the elevating devices is correct?

Combination rope sweeps usually come in 100-fathom (600-foot) sections. But gear manufacturers have indicated that they can place spliced “eyes” at 90-foot sections. Additionally, manufacturers of combination rope may be able to produce 90-foot combination rope “shots” with spliced eyes or other such sections at 90-foot intervals for attaching disc/bobbins. The spliced eyes provide a viable means of placing shackles such as a

"hammerlock" or short length of chain and shackles where elevating discs or bobbins can be attached. This method of attachment reportedly provides a reliable means of attaching the discs/bobbins to combination rope sweeps than using clamps or other approaches that fishers and gear manufacturers have tried to date.

If the regulations require spacing at 60 feet, the elevating device would need to be placed on parts of combination rope sweep sections that may or may not be where the sections are joined with spliced eyes. This may make it difficult to reliably attach the elevating discs/bobbins on combination rope sweeps. Attachment of discs/bobbins to steel cable or chain sweeps that are covered with small (typically 2 inches in diameter) rubber discs (i.e."cookie sweeps") does not present the same potential difficulties for disc attachment at spaced intervals.

One manufacturer has used metal sleeves on the sweep to mark the 60 and 90-foot intervals which would provide a quick visual method to determine spacing. Can this method be used on any sweep material and is it economical?

Marking the vessel deck, trawl alley or trawl way fence at 60-foot intervals where the sweep is brought back onto the vessel may make it easier to quickly see if the elevating devices are in the proper locations. This method may work better for larger vessels using forward net reels.

Can the elevating devices be manufactured to easily see if they have worn to the point of not providing the elevation necessary to meet the standards?

The goal is to provide the crew, observers, OLE, USCG, and possible industry inspectors a quick visual method to determine if an elevating device is not meeting the standard and may need replacing.

According to gear manufacturers, discs/bobbins used on the combination sweep line could be equipped with wear indicating devices such as the ones used on some automobile tires (tread wear indicators) such that it would indicate if wear has made the device not meet the standard. Discs could have three evenly spaced holes drilled into them so that reaching the holes through wear would show that the discs no longer provide the necessary elevation to meet the standard. Are there other types of wear indicators?

Can the modified sweep fit on the reels and can it be wound level?

Beyond the costs associated with purchasing or constructing modified sweeps, fishers face the potential for costs to make the modified sweeps work on the trawl systems on a regular basis. For fishers currently using a trawl net and sweeps that fill their net reel fully, the additional load of the discs/bobbins may not be accommodated on their net reels. Some fishers facing this situation may have to modify net reels. This can usually be done by increased drum diameter of the net reel and possibly elevating the net reel to achieve necessary deck clearance. Alternatively, fishers may have to reduce the amount of sweep they use under the modified disc requirement relative to what they use currently. This may

have some effect on catch rates of fishing efficiencies. Fishers who have to cut back on sweep lengths as part of this regulation may lose some fishing efficiency, which would be a cost as a result of the requirement to modify sweeps.

Can modified sweeps be used on vessels without net reels?

Field trials on industry vessels without net reels indicate that disks of graduated diameters should be attached to the sweeps where the elevating discs are installed. This apparently facilitates winding the elevating discs through the level winds. The level winds may need to be modified and require extra maintenance to allow discs to be rolled onto main winches. Sweep winches may need to be added if main winches cannot be made to work on a regular basis. The use of 8-inch disks at 60-foot spacing is expected to be the preferred set up for vessels without net reels.

Should allowances be made for using Spectra or other lighter weight rope instead of combination rope?

The lighter Spectra rope may allow for better lift than the combination rope. It may be possible that not as many elevating devices would be needed on Spectra or other lighter weight rope to achieve the same clearance as heavier gear. Additional research is needed to explore this option, and the Council may wish to review progress on this method in the future. Should the Council do a review in 3 or 4 years, or should they wait until they are notified by the industry or the AFSC that enough additional work has been done to justify looking at new techniques?

Can the elevating devices be securely attached to the sweeps?

Research showed that the most effective way to attach the elevating devices to combination rope is at the rope "eyes" use for connecting sections. This may be another reason why it may be desirable to use 90-foot spacing as the standard instead of 60 feet. According to industry feedback, there is no problem attaching elevating devices to cookie gear sweeps and to the wire for sweeps on vessels without net reels.

Is it possible to have an industry inspection program to certify the modified sweeps meet the standard?

It would be helpful to have an industry program to certify that new and used modified sweeps meet the standards. This would allow for documentation for a sweep to be presented during inspections and would be efficient for fixing any problems noted during inspection.

Additional Question for the Workshop if time allows:

Should the Wedge be open to all nonpelagic trawl gear, or only to those using modified gear?

The Council may want to analyze options for the wedge area with the modified gear requirement to either allow all nonpelagic trawling in the wedge area or to only allow modified gear in the area. See Figure 4. If time allows, identify the pros and cons to the options?

Appendix 1

Results of the 3/14/07 Meeting with NMFS, USCG and Industry Regarding Modified Trawl Sweeps

A meeting sponsored by the Head and Gut Workgroup was held at Dantrawl, Inc. in Seattle on March 14, 2007, to discuss the potential sweep modification requirement for the flatfish fishery. The meeting was attended by personnel from two flatfish trawl sweep manufacturers (all 4 sweep manufacturers that currently make flatfish nets for the Bering Sea fleet were invited by John Gauvin), fishing industry representatives, AFSC research and NPGOP staff, USCG, OLE, and NMFS SF. John Gauvin of Gauvin and Associates organized the meeting.

Attendees	**Affiliation**
Craig Rose	AFSC
Carwyn Hammond	AFSC
Jennifer Ferdinand	AFSC NPGOP
JR Osuga	Cascade Fishing
Tim Meintz	Cascade Fishing
Todd Loomis (by phone)	Cascade Fishing
Phil Dang	Cascade Fishing
Paul Pedersen	Dantrawl Inc
Elias Olafsso	Dantrawl Inc
Lori Swanson	Groundfish Forum
John Gauvin	Head and Gut Workgroup
Melanie Brown	NMFS SF AKR
Koji Tamura	Nets
Steve Patterson	Nets
John Adams	Nets
Michael Killary	NOAA OLE
Mitch Hull	Ocean Peace
Jody Nummer	USCG

Below are the issues identified regarding the construction of a sweep that would meet the proposed standards for spacing and elevation.

1. Can the sweep be marked so that one could easily see if the elevating devices are spaced as required?

The participants determined that it would be possible to mark the sweep with paint or tape at the appropriate intervals. There are concerns that tape or paint may wear. It also may be possible to insert a chain between sweep components where an elevating device should be installed so that the absence of the device could be easily detected. This could reasonably be done every 90 feet, since sweeps are often manufactured in 90 foot sections. Mandating chain every 30 or 45 feet is not reasonable as it would double or

triple the amount of hardware (thimbles, hammerlocks, swedging sleeves, etc) and increase the amount of wire needed due to increased splices or swedges.

Another potential method for checking the spacing of the elevating devices is to mark the vessel deck, trawl alley or trawl way fence where the sweep is brought back onto the vessel. This method may work better for larger vessels without an aft reel and would reduce concerns for the markings possibly wearing off the sweeps after use.

2. Can the elevating devices be manufactured so one could easily see if they have worn to the point of not providing the elevation necessary to meet the standards?

The participants determined that the bobbins used on the combination sweep line could be notched such that it would indicate if wear has made the device not meet the standard. On cookie sweeps, the discs could have 3 evenly spaced holes drilled into them so that reaching the holes through wear would show that the discs no longer provide the necessary elevation to meet the standard.

The goal is to provide the crew, observers, OLE, USCG, and possible industry inspectors a quick visual method to determine if an elevating device is not meeting the standard and may need replacing.

3. Should any distance from the footrope be exempt from the need for elevating devices?

The original proposal for the gear modification would have provided an exemption from having elevating devices for the section of the lines within 25 fathoms of the footrope.

The participants reviewed the construction of the trawl, including the attachment of the doors and net to the sweeps by the use of bridles. The bridles are likely to be plain steel cable, except for the bottom bridles on the net, which may have a protective covering. Bridles connecting the net to the sweeps may be from 15 to 60 fathoms long (Elias Olafsso, Dantrawl, Inc.). Because the bridles are a small portion of the entire trawl which has contact with the bottom, and the fishers may need to use different size bridles, it would be more practical and still effective to limit the requirements for the elevating devices to only the sweep components of the trawl. Therefore, bridles should be exempt from the portion of the gear where elevating devices are required. The elevating devices would be required on the sweep spanning from the point where the bridles come together between the trawl doors and the net.

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4. Can the modified sweep fit on the reels and can it be wound level?

The participants were concerned that some vessels may not have the reel capacity to handle modified sweeps because their current trawl system takes up nearly all the room on their net reel. Also, for vessels without net reels, problems may occur with the elevating devices getting hung up on the level wind device on their main winches as the

sweep is wound on the main winches. The flatfish fleet is working with gear manufacturers and Dr. Craig Rose to evaluate the amount of additional space the modified discs take on net reels that are already close to capacity. For vessels with net reels that may not have sufficient space, one remedy would be to cut back on the amount of sweep used by the vessel. This would be expected to reduce the vessel's area swept per tow relative to prior to the sweep modification and could reduce catch rates proportional to the reduction in sweep used. Alternatively, vessels could install larger net reels or work with gear manufacturers to find bobbins or discs that achieve the standards of the regulation while taking up relatively less space on the net reel.

For vessels without net reels, vessel owners are working with Dr. Rose and trawl system engineers to come up with elevating devices that slip through the level wind devices on trawl winches without damaging the discs or level winds. Preliminary work in this area indicates that elevating devices can be used on vessels without net reels. If further evaluation indicates otherwise, vessels without net reels would have to install sweep winches to handle the modified sweeps.

Vessel owners also are concerned that the elevating devices could cause the sweeps to wind unevenly on the net reel, resulting in an uneven circumference on the reel. This causes one side of the net (the side wrapping around the larger circumference) to come in faster than the other side. This can result in damage to the gear if the net or its components experience uneven stress during haulback or while on the net reel. Some vessels may also be at capacity with their net reels, and adding the elevating devices may exceed what can be held on the reel. The current research on increasing the elevating devices spacing may mitigate this concern. Additional issues, such as attachment of the sweep are being identified and work is in progress to resolve.

These issues are being tested now on a several vessels to determine the nature of any problems and potential solutions. The Council will be updated on the progress at the June meeting.

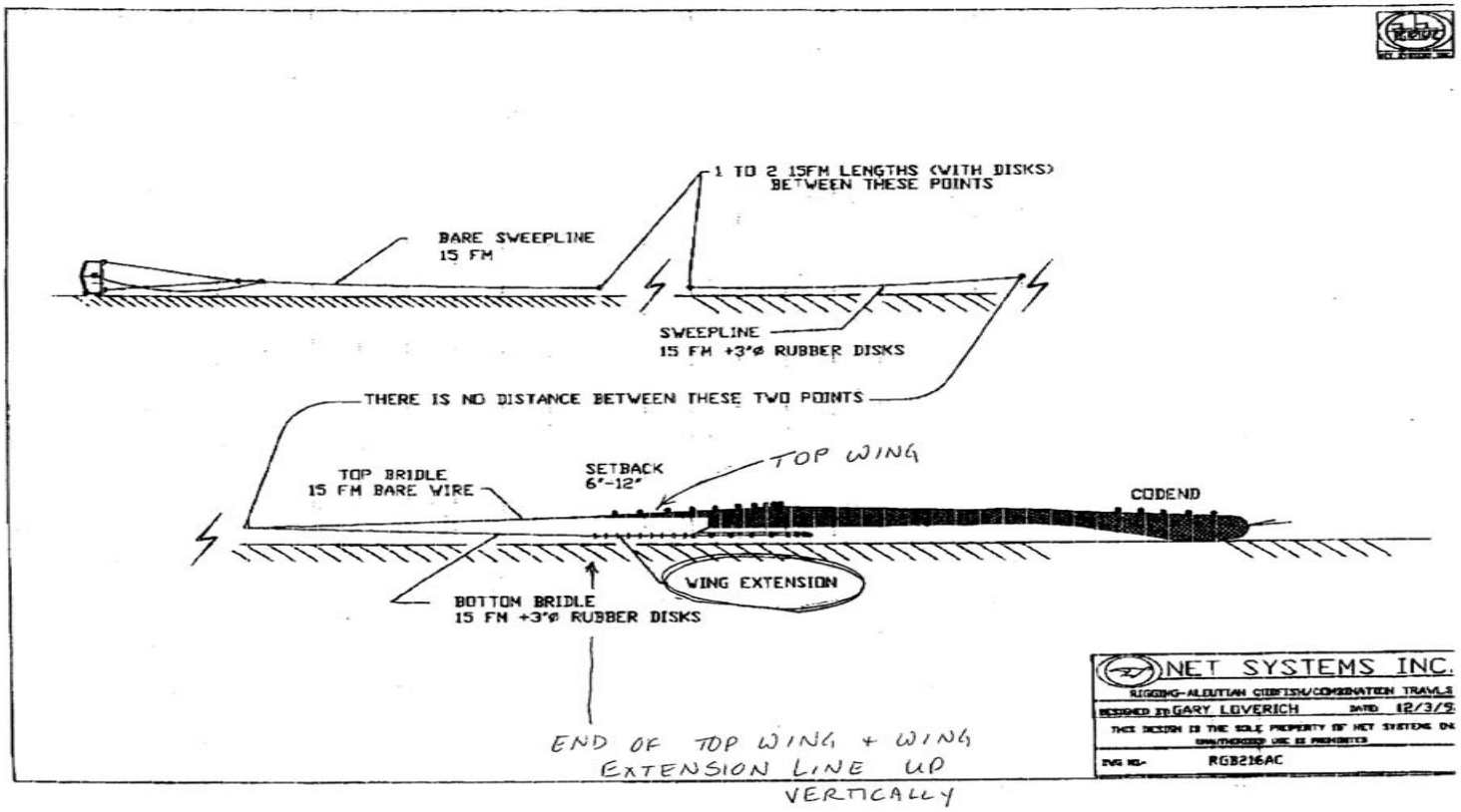

Fig. 1 Nonpelagic Trawl (Source: Use by permission from Steve Patterson, NET Systems, Inc. March 21, 2007)

Figure 2. Example of an elevating device. Bobbin on combination line sweep. (Source: Dantrawl, Inc. March 2007)

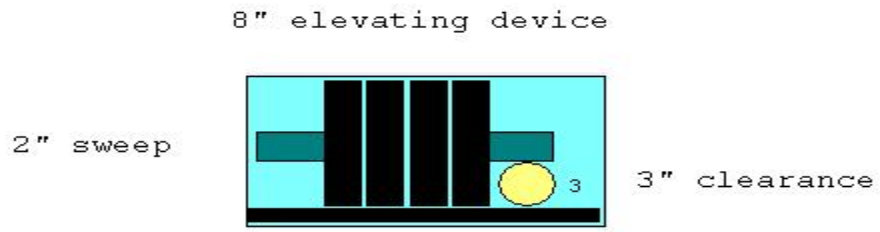

Figure 3. Schematic of Elevating device on sweep and clearance

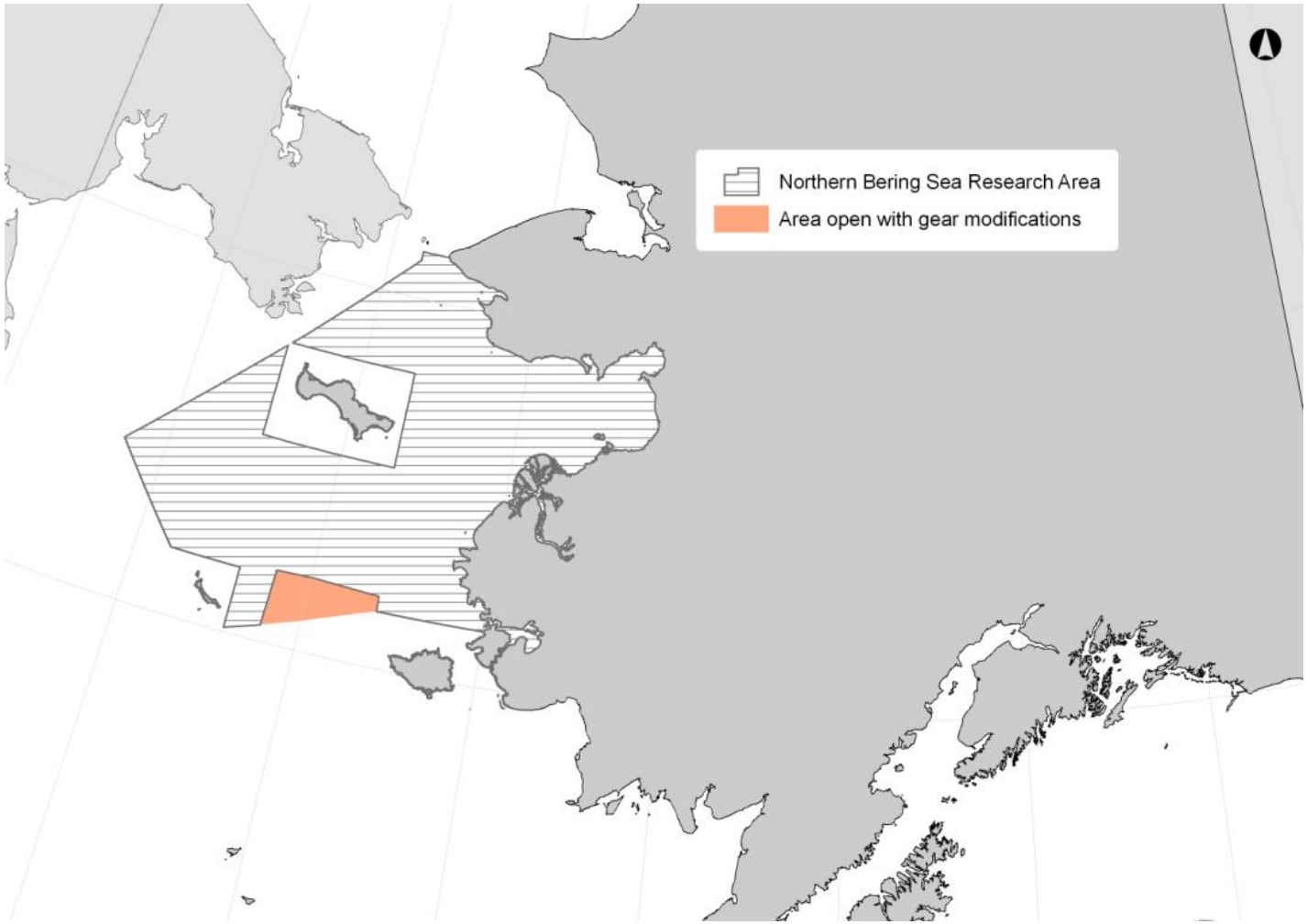

Figure 4 The Wedge Area to be Opened with Modified Gear Requirement

G:\FMGROUP\EFH BS\gear modification\Gear modification implement 8-20.doc
Mnbrown:7-3-08
Jgauvin: 8/15/08
Crose: 8/20/08
Jhale: 8/21/08